

WHAT IS CLAIMED IS:

1. A failure detection device for detecting a failure of a rotational angle detection sensor, which sensor detects a rotational angle through which a rotary member has rotated, the failure detection device comprising:

a first detection element which has an output that increases as the rotational angle increases;

a second detection element which has an output that decreases as the rotational angle increases; and

detecting means for detecting a failure of either the first detection element or the second detection element by comparing a calculated value, based on the outputs of the first and second detection elements, with at least one predetermined value.

2. The failure detection device according to claim 1, wherein the at least one predetermined value includes a first predetermined value set for the first detection element and a second predetermined value set for the second detection element, and wherein the first predetermined value is set on the basis of output of the first detection element in normal operation and the second predetermined value is set on the basis of output of the second detection element in normal operation.

3. The failure detection device according to claim 2, wherein the detecting means determines that one of the first and second detection elements has failed if output of the one detection element does not change while output of the other detection element is changing.

4. The failure detection device according to claim 3, wherein said outputs are linear and have

absolute values of inclination which are substantially equal.

5. The failure detection device according to claim 4, wherein at least the first detection element and the second detection element form a position sensor which detects rotational position of a shift-operation member for setting a range in a transmission.

6. The failure detection device according to claim 5, wherein the range of the transmission is one of plural ranges, and the at least one predetermined value is set on the basis of an angular interval between adjacent ranges.

7. The failure detection device according to claim 6, wherein the plural ranges of the transmission include at least three ranges, and the predetermined value is set on the basis of a shortest angular interval.

8. The failure detection device according to claim 3, wherein the first predetermined value and the second predetermined value are set substantially equal.

9. The failure detection device according to claim 2, wherein said outputs are linear and have absolute values of inclination which are substantially equal.

10. The failure detection device according to claim 2, wherein the first predetermined value and the second predetermined value are set substantially equal.

11. The failure detection device according to claim 1, wherein the detecting means determines that one of the first and second detection elements has failed if output of the one detection element does not change while output of the other detection element is changing.

12. The failure detection device according to claim 11, wherein said outputs are linear and have absolute values of inclination which are substantially equal.

13. The failure detection device according to claim 11, wherein the first predetermined value and the second predetermined value are set substantially equal.

14. The failure detection device according to claim 1, wherein said outputs are linear and have absolute values of inclination which are substantially equal.

15. A failure detection device for detecting a failure of a rotational angle detection sensor, which sensor detects a rotational angle through which a rotary member has rotated, the failure detection device comprising:

a first detection element;

a second detection element; and

detecting means for detecting a failure of either the first detection element or the second detection element by a determination that output of one detection element does not change while output of the other detection element is changing.

16. The failure detection device according to claim 15, wherein at least the first detection element

and the second detection element form a position sensor which detects rotational position of a shift-operation member for setting a range in a transmission.

17. The failure detection device according to claim 16, wherein the range of the transmission is one of plural ranges, and the at least one predetermined value is set on the basis of an angular interval between adjacent ranges.

18. The failure detection device according to claim 17, wherein the plural ranges of the transmission include at least three ranges, and the predetermined value is set on the basis of a shortest angular interval.